HANKIN VIDEO TECHNICAL NOTES

-DEFENCE COMMAND-

HANKIN VIDEO GAME - TECHNICAL NOTES

The HANKIN video cabinet contains the following harnesses. (Refer to Figure 1 - Interconnection diagram).

1. Main Harness (A & B)

2. Transformer Board Harness

3. Control Panel Harness (2 off for cocktail)

4. Logic Board Adaptor Harness

The Main Harness interfaces the control panels, monitor and all standard components such as START 1 & 2 buttons, coin mechanism, coin counter, etc. to the logic board via two 24-way Molex plugs (P1 and P2). P2 is dedicated to control panel signals while P1 carries all other signals to and from the logic board. The Main Harness also provides miscellaneous power to the TV monitor and fan from the transformer board via a third 24-way connector (J3).

The Transformer Board Harness is a custom design for each game. It supplies power to the logic board via P7 and miscellaneous power for the monitor, fan and cabinet via J3. In order to allow for an audio amplifier external to the logic board, the speaker circuit is wired to P3 in the Main Harness, as is the audio O/P from the logic board. When no external amplifier is required, links between corresponding pins of J3 are inserted in the Transformer Board Harness, to complete the audio circuit. Transformer Board wiring is shown in Figure 2.

The control Panel Harnesses are wired directly to the switches and LEDS used on each control panel. They interface to the Main Harness via Molex plugs and then via P2/J2 to the Logic Board. Control Panel wiring is shown in Figure 3.

The Logic Board Adaptor Harness interfaces the Transformer Board Harness and the Main Harness to the logic board via J7 and J1 respectively.

Wiring Diagrams for the Main Harness and the Logic Adaptor Harness are provided in the Drawing Supplement.

The cocktail Defence Command uses a KZ14E monitor for which circuits are provided and used a 240V input switching regulator to supply +5V, +12V, -5V. A 240:110V transformer powers the monitor and fan only.

OPTION SETTINGS

Three switches are provided on the Audio/Test bracket mounted above the cash box. Layout of this bracket is as below.
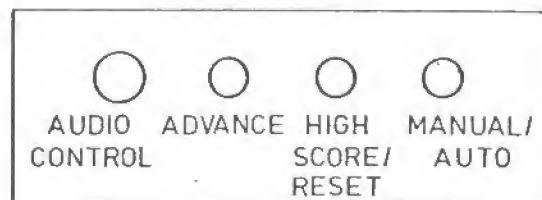
SWITCHES OPERATED
DOWN TO ACTIVATE

The option setting mode is entered by pressing ADVANCE with AUTO switch pressed. Pressing the ADVANCE switch (with AUTO down) steps through 28 functions which display housekeeping information and allow options to be set. The more important of these are listed below. Changes are made to option settings using the HIGH SCORE/RESET switch. With AUTO/MANUAL switch in AUTO, HIGH SCORE switch counts up. With AUTO/MANUAL switch in MANUAL, HIGH SCORE switch counts down.

    Function 01 :   Displays number of coins through coin mechanism

    Function 08 :   Allows point score, for which a bonus ship is awarded, to be selected. Recommended setting is 10 000.

    Function 09 :   Allows number of ships per game to be selected. Recommended setting is 03.

    Function 10 :   Must be set to 00 if credit selection other than 1 coin 1 play is required

Function 11   :   Left coin multiplier.
                    Recommended set to 01

Function 14   :   Allows number of coins for credit to be
                    selected

Function 15   :   Allows number of coins for bonus to be
                    selected

Function 16   :   Allows minimum number of coins to be set
                    (Set to 0)

Function 17   :   Free Play   (Set to 0)

Settings for 20c, 30c, 40c play are as follows:

	FUNCTION		
	10	14	15
20c play	03	01	00
30c play	00	03	03
40c play	00	02	00

PLA

P7 | J7

TRANSFORMER
BOARD HARNESS

P3

J3

O VOL. CONTROL
& SPEAKER

O FAN

PLB

J1 | P1

J8 | P8

TO MONITOR

CONTROL PANEL
HARNESS
(PLAYER 1)

P5 | J5

J2 | P2

P6 | J6

CONTROL PANEL
HARNESS
(PLAYER 2)

LOGIC BOARD
HARNESS

O COIN MECHANISM

O ADVANCE

O HIGH SCORE

O MAN/AUTO, DOWN/UP

O START 1, START 2

MAIN HARNESS
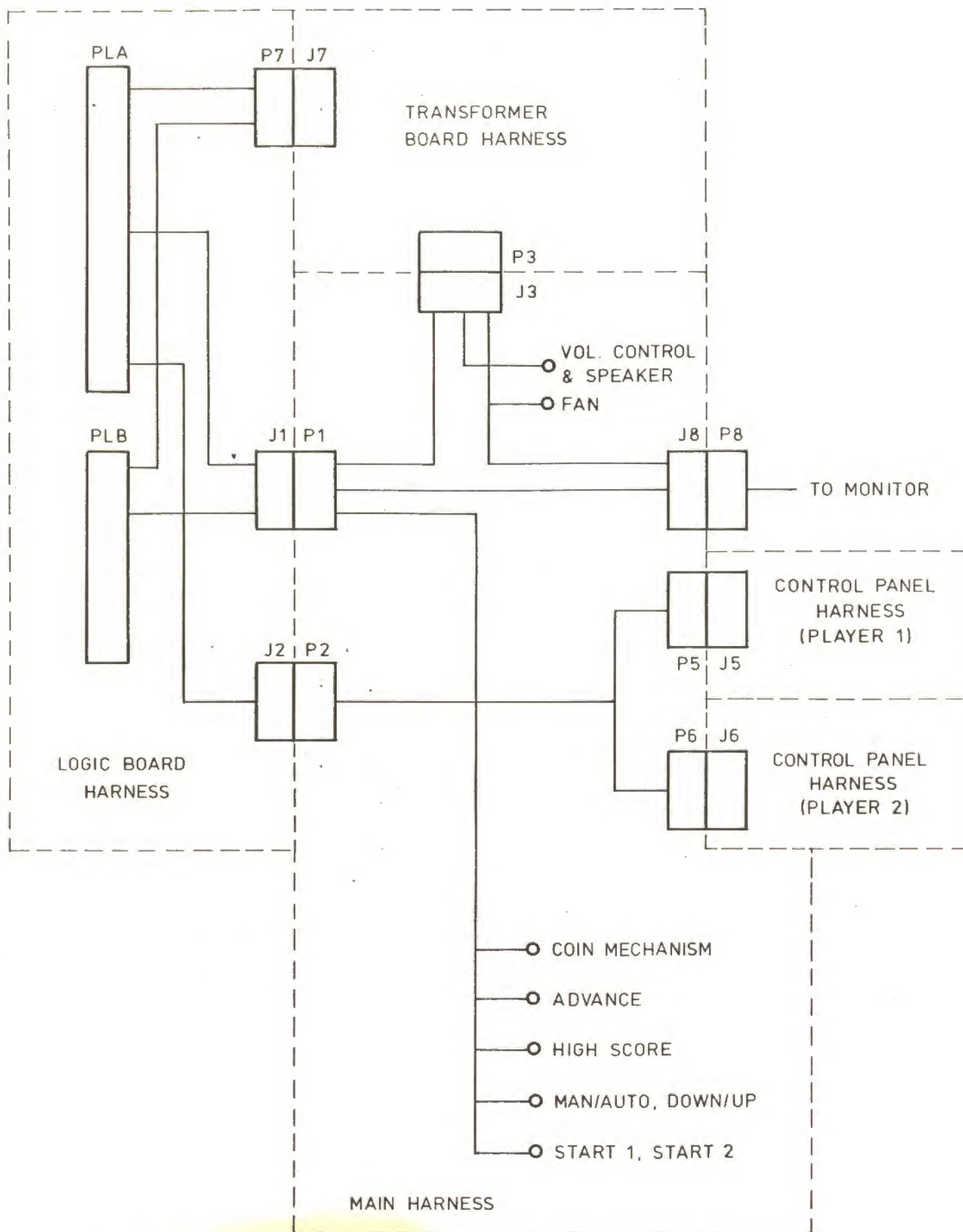
FIGURE 1: INTERCONNECTION DIAGRAM

DEFENCE COMMAND COCKTAIL MODEL WITH 14" MONITOR

FIGURE 2: TRANSFORMER WIRING DIAGRAM (STK - MC022A)

FIGURE 3: DEFENCE COMMAND CONTROL PANEL WIRING

TO SUIT: COCKTAIL CABINET WITH 14" MONITOR

MAIN HARNESS – PART A

MAIN HARNESS – PART B

COLOUR CODE

BK	BLACK	OR	ORANGE
BL	BLUE	P	PURPLE
BN	BROWN	R	RED
GN	GREEN	W	WHITE
GY	GREY	Y	YELLOW

DEFENCE COMMAND LOGIC BOARD ADAPTOR HARNESS WIRING DIAGRAM

P7 12 PIN LINE PLUG

PIN	SOURCE	FUNCTION	COLOUR
1	PLA-1	SWITCH COMMON	BK
2	N/U		
3	PLA-2	+5V	R
4	PLB-6		R
5	N/U		
6	PLB-8		OR
7	PLB-2	SWITCH COMMON	BK
8	PLB-4		BK
9	N/U		
10			
11			
12	PLB-12	-5V	BL

J2 24 PIN LINE PLUG

PIN	SOURCE	FUNCTION	COLOUR
1	J1-1	SWITCH COMMON	BK
	J2-13		BK
2	N/U		
3	PLA-11	PLAYER 1 FIRE	W/Y
4	PLA-12	PLAYER 1 BOMB	W/GN
5	PLA-13	PL 1 REVERSE	W
6	PLA-N	PLAYER 1 THRUST	W/BL
7	PLA-R	PLAYER 1 DOWN	W/GY
8	PLA-14	PLAYER 1 UP	W/BK
9	PLA-P	PL 1 HYPER SP	W/R
10	PLA-15	1 PLAYER	P
11	PLA-S	2 PLAYERS	W/R
12	TERM A	GROUND	GN
13	J2-1	SWITCH COMMON	BK
14	N/U		
15	PLA-J	PLAYER 2 FIRE	Y/W
16	PLA-K	PLAYER 2 BOMB	GN/W
17	PLA-L	PL 2 REVERSE	P
18	PLA-8	PLAYER 2 THRUST	BL/W
19	PLA-M	PLAYER 2 DOWN	GY/W
20	PLA-10	PLAYER 2 UP	BN
21	PLA-9	PL 2 HYPER SP	OR
22	N/U		
23			
24	TERM A	GROUND	GN

(SEE NOTE 1 — pins 10, 11)

J1 24 PIN LINE PLUG

PIN	SOURCE	FUNCTION	COLOUR
1	PLB-13	VIDEO 0V	BK
2	J2-1	SWITCH COMMON	BK
	N/U		
3			
4			
5			
6			
7			
8	PLB-14	VIDEO SYNC	P
9	N/U		
10	PLB-15	VIDEO RED	Y/R
11	PLB-16	VIDEO GREEN	Y/GN
12	PLB-17	VIDEO BLUE	Y/BL
13	PLA-X	ADVANCE	BL/W
14	PLA-Y	HIGH SCORE	GY/R
15	PLA-15	1 PLAYER	P
16	PLA-S	2 PLAYERS	W/R
17	PLA-21	COIN 1	Y
18	N/U		
19			
20	PLA-19	MAN/AUT D/UP	W/GY
21	N/U		
22	PLA-F	SPEAKER -	BN
23	PLA-6	SPEAKER +	R/GN
24	N/U		

(SEE NOTE 1 — pins 15, 16)

PLB 20 WAY EDGE CONNECTOR

PIN	SOURCE	FUNCTION	COLOUR
1,2	P7-7	SWITCH COMMON	BK
3,4	P7-8		BK
5,6	P7-4	+5V	R
7	PLA-C	+12V	OR
8	P7-6		OR
9	N/U		
10			
11	PLA-4	-5V	BL
12	P7-12		BL
13	J1-1	VIDEO 0V	BK
14	J1-8	VIDEO SYNC	P
15	J1-10	VIDEO RED	Y/R
16	J1-11	VIDEO GREEN	Y/GN
17	J1-12	VIDEO BLUE	Y/BL
18	N/U		
19			
20			

PLA 44 WAY EDGE CONNECTOR

PIN	SOURCE	FUNCTION	COLOUR
A,1	P7-1	SWITCH COMMON	BK
B,2	P7-3	+5V	R
C,3	PLB-7	+12V	OR
D,4	PLB-11	-5V	BL
E	N/U		
5			
F	J1-22	SPEAKER -	BN
6	J1-23	SPEAKER +	R/GN
H	N/U		
7			
J	J2-15	PLAYER 2 FIRE	Y/W
8	J2-18	PLAY 2 THRUST	BL/W
K	J2-16	PLAYER 2 BOMB	GN/W
9	J2-21	PL 2 HYPER SP	OR
L	J2-17	PL 2 REVERSE	P
10	J2-20	PLAYER 2 UP	BN
M	J2-19	PLAYER 2 DOWN	GY/W
11	J2-3	PLAYER 1 FIRE	W/Y
N	J2-6	PLAY 1 THRUST	W/BL
12	J2-4	PLAYER 1 BOMB	W/GN
P	J2-9	PL 1 HYPER SP	W/R
13	J2-5	PL 1 REVERSE	W
R	J2-7	PLAYER 1 DOWN	W/GY
14	J2-8	PLAYER 1 UP	W/BK
S	J2-11	2 PLAYERS	W/R
15	J1-16	1 PLAYER	P
T	J1-15		
16	N/U		
U			
17			
V			
18			
W	J1-20	MAN/AUT D/UP	W/GY
19	J1-13	ADVANCE	BL/W
X			
20	N/U		
Y	J1-16	HIGH SCORE	GY/R
21	J1-17	COIN 1	Y
2	N/U		
22			

TERMINAL A — J2-24 GN, J2-12 GN

NOTES: 1. 1 PLAYER & 2 PLAYERS ARE TERMINATED AT J1 FOR CABARET, UPRIGHT & 14" MONITOR COCKTAIL MODELS; & AT J2 FOR 20" MONITOR COCKTAILS.
2. THIS DIAGRAM APPLIES TO KAGA DENSHI PCB'S ONLY.
3. FOR UPRIGHT & CABARET MODELS, J2-12, J2-24 & TERMINAL A ARE NOT USED.

RAM

DEFENCE COMMAND MKI

SHEET 1 OF 2

DEFENCE COMMAND MKI

SHEET 2 OF 2